Title: Pollinator Friendly Demonstration Gardens

Pollinator demonstration garden at CCE Putnam's public demonstration and teaching garden: Plant materials and interpretive signage

Project Leaders

Jen Stengle, Resource Educator
Cornell Cooperative Extension of Putnam County
1 Geneva Rd, Brewster NY 12509
Phone: (845)464-7736
Email: jjs95@cornell.edu

Cooperators

Cornell Cooperative Extension Master Gardener Volunteers of Putnam County

Abstract

A pollinator-friendly landscape can be a beautiful and functional asset to the home and can provide forage, nesting sites, and shelter for pollinators and other beneficial insects. We created an attractive and well-managed demonstration garden that invites the public to observe plant-pollinator interactions up close. Our garden is easy to access and is in a highly visible space in Putnam County. This curated space includes interpretive signage that offers learning opportunities even when CCE educators or Master Gardener Volunteers are not present. This garden demonstrates easy practices that visitors can adopt at home to increase pollinator diversity and abundance.

Background and Justification

Urban and suburban green-spaces and backyards can offer a rich and varied habitat for both managed and native pollinators, and other beneficial insects. Managed landscapes that include both native and non-native plant species with a deliberately extended sequence of bloom may help to extend the growing season into early spring and late fall, providing a longer season of forage for pollinators. Gardeners can turn their home landscapes and garden spaces into vibrant and varied pollinator habitat. The more of these pollinator-friendly spaces we create, the greater the likelihood they will interconnect, providing diverse habitat and refuge for these important insects.

Managed landscapes and garden spaces may also increase pollinator exposure to environmental toxins and pesticides. Part of our approach was to introduce the concept of Integrated Pest Management to program attendees and reinforce the impacts that our pest management choices may have on pollinators. Additionally, as we proceeded with our project, program attendees and garden visitors expressed concerns about harboring insects that could potentially bite or sting. Our garden design and interpretive signage address these two important issues as well as concepts like plant diversity, season of bloom and pollinator

diversity. Signage includes QR codes that directed garden visitors to CCE and NYS IPM websites for more information, and offers a blank space to write in hot-topic issues or news.

We want to guide gardeners past the perception of bees as stinging insects only, and promote a positive image of pollinators and biodiversity. Demonstration and teaching gardens that look attractive and well managed, and that harbor pollinators, offer an opportunity for gardeners to see pollinators up close. We will continue to use the pollinator demonstration garden as outdoor classroom for hands-on instruction. Gardeners attending our small space vegetable garden classes, native plant classes, and seed sowing classes, will have an opportunity to learn how pollinators interact with each type of garden. We hope to bring homeowners closer to an understanding of pollinators that goes beyond fearing bees as "stinging insects" and welcoming them as garden allies.

As part of our response to national and international concern about native and managed pollinators, educators and volunteers at CCE of Putnam County launched a Bee-Friendly Backyard initiative. While this NYS Community IPM project focused on developing a pollinator demonstration garden, it complements CCE Putnam's larger Bee-Friendly Backyard efforts, which included a 2016 volunteer training, ongoing public programs, and news and social media articles. Our demonstration garden is one of the tools we use to bring the public to a better understanding of how their choices can affect pollinator health and habitat. Our garden space taught visitors and volunteers that they can create a Bee-Friendly Backyard—one that offers forage, structural refuge, and limits pesticides exposure—and provide a safe haven for bees and other pollinators. As one of our workshop attendees reported *"It was wonderful to be able to walk outside after the talk to visit garden areas and see pollinators in action. I hadn't realized even carpenter bees have a pollinator role."*

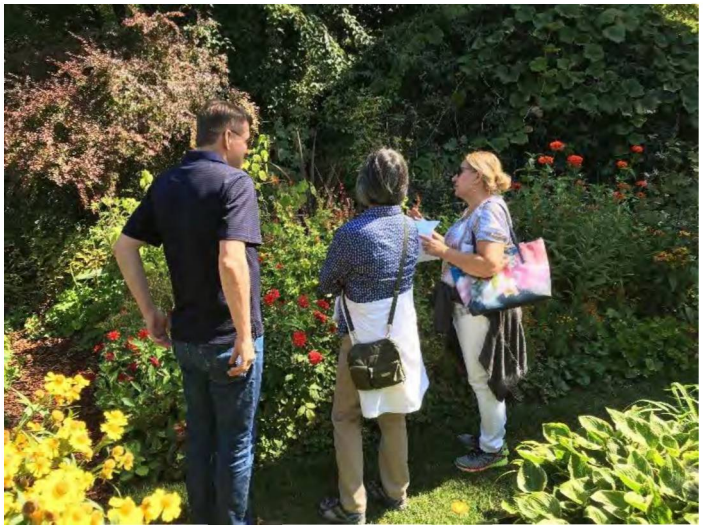
Objectives

The purpose of this garden is to build awareness of pollinator-friendly landscape management practices, to improve understanding of bees, wasp, and hornets, and to increase use of integrated pest management practices in the landscape.

1. Research pollinator support practices suitable for home landscapes
2. Engage volunteers to plan, plant, curate, and promote garden
3. Implement garden plan
4. Install interpretive signage
5. Build public awareness of garden and pollinator-friendly practices
6. Host programs in garden
7. Review class evaluations and comments of visitors
8. Project Evaluation

Procedures

1. **We researched** pollinator-attracting plants suitable to our garden conditions. Using resources available on web and in print (i.e. Current research papers, Pollinator Partnership regional plant lists, Xerces Society plant lists) to create a list of pollinator-friendly native and non-native plants well suited to our site.
2. **Engage Volunteers.** We recruited Master Gardener Volunteers for project planning, installation and maintenance. MGVs were also solicited to develop and write newsletter and webpage articles.
3. **Implement Garden Plan**. Prolonged heat and drought split our planting window. While we installed many plants prior to July and August 2016, we delayed the planting of a few perennials and shrubs. Drought conditions persisted and while we completed our perennial and bulb plantings, we decided it would be wiser to delay the planting of broad-leafed (Ilex glabra) and needled (Picea abies f. 'pendula') evergreens until spring of 2017 as the site is exposed and windy.
4. **Install attractive durable signage**: using funding from another grant supporting our Bee-Friendly Backyards initiative, we collaborated with Cornell Botanic Gardens' Sarah Hunley-Fiorello to design four interpretive pollinator garden signs. The signage, photos, and teaching materials are available to CCE educators statewide through a CCE file-sharing site. (Other organizations or individuals who would like access to these materials can contact the project leader above for more specifics about use and permissions.)
5. **Build Public Awareness**: Through newsletter and newspaper articles we strove to elevate awareness of the importance of pollinators and the steps we can take to ensure that our home landscapes are "bee-friendly." Master Gardener Volunteers and CCE educators wrote newspaper ready article which are now housed on a shared CCE website for use by other CCE educators in their outreach.
6. **Host Classes** in the Garden: We used the garden as well as our Community Garden demonstration plot to offer classes. We also teamed up with Stonecrop Gardens, a world-class display garden, to offer a Bee-Friendly Backyard class with visits to their systematic-orders bed.
7. **Review evaluations** of comments and visitors: We used pre and post questionnaires in some classes, and



Master Garden Volunteers and CCE Putnam Educators hosted a Bee-Friendly Backyards program with Stonecrop Gardens to show how gardeners can make their home landscapes a pollinator-friendly habitat.

used shorter questionnaires in others to assess changes in attitudes and behaviors. We also used a season-end questionnaire to see if classes, workshops or the demonstration garden changed the way attendees thought about pollinators in their landscapes.

8. **Project Evaluation:** Were we successful in building awareness of pollinator-friendly landscape management practices, improving understanding of bees, wasp, and hornets, and increase understanding of integrated pest management practices in the landscape? And what would our next steps for 2017 be? In the "Results and Discussion section we cover evaluation of the program and next steps.

Results and Discussion

1. **Garden Requests:** Class attendees and garden visitors appreciate being able to see the plants and insects in action. Even though we provide links to plant lists, respondents to our survey are asking for ready-to-use printed plant lists both short and long. Though hard copies of these are provided at workshops we have now purchased covered plastic brochure boxes for the garden. There we will stock some of the excellent regional plant lists from the Xerces Society and Pollinator Partnership as well as our own list developed by Master Gardener Volunteers and CCE educators.
2. **Attitude, Behaviors, Knowledge:** When we first engaged volunteers we asked a group of 36 MGVs about their perceptions of pollinators and what barriers lay in the way of homeowners adopting practices that support pollinators. Fear of stinging insects ranked high on their list. Similarly, program attendees often asked why they should welcome bees and wasps into their yard. Our summer and fall programs focused on helping address those fears as well as offering bee-friendly practices that homeowners could adopt. When we queried program participants we assessed how their attitudes, behaviors, and knowledge changed.

   Attitude changes:

   70% strongly agreed that they were more aware of pollinators in their yard and garden

   75% strongly agreed that they better understood that stinging insects are important pollinators

   88% strongly agreed that they understood the impact of improper pesticide use on pollinators

   Behavior changes

   64% have put some pollinator-friendly practices to use in their gardens

   35 % intend to put some into use, but haven't yet

   New Knowledge:

   69 % strongly agreed that they had learned of landscape practices that support pollinators

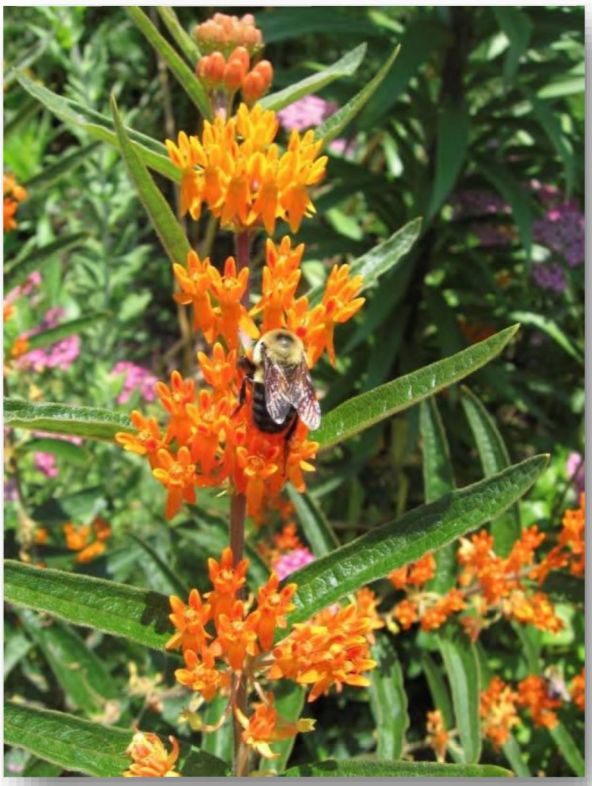
   56% strongly agreed and 25% agreed that they learned some of the differences between bees, wasps, and hornets

   63% strongly agreed and 25% somewhat agreed that they had a better understanding of integrated pest management

We feel that we have had some sucesses with class particpants when it comes to new behaviors and attitudes. But we clearly have more work to do when it comes to pollinators that sting. Here's a quote from one of our program attendees that illustrates a change in behavior and attitude.

"*As a result I have changed many blind practices in lawn care and gardening such as: I no longer mow my lawn. I allow for piles of branches to remain in the yard for bees to nest in. I use more native plants and slowly have removed invasive plants I unknowingly planted in the past. I hope and look forward to future programs as the staff's presentation is friendly and the content is interesting and informative and has enhanced my relationship with the natural surrounding world. A big Thank You! to all the volunteers for their service!!!!*"

3. **Resources developed**: The signage, photos, and teaching materials are available to CCE educators statewide through a CCE file-sharing site. Other organizations or individuals who would like access to these materials can contact the project leader above for more specifics about use and permissions. Pdfs can be viewed at putnam.cce.cornell.edu/gardening/create-a-pollinator-paradise
4. **Next steps for 2017**: We will continue to promote the garden as well as offer classes in it. We will add additional signage to draw visitors in and will stock the covered brochure boxes with plant lists and resources. We will also continue to update our website with pollinator resources and related links. We are also pursuing another demonstration garden location on the other side of Putnam County (Philipstown Town Hall) in another highly visible space.



The photo above and the examples of garden signage below are just some of the resources available for CCE educators to use in their workshops and demonstration gardens. Other organizations wishing to use these materials can review them at atputnam.cce.cornell.edu/gardening/create-a-pollinator-paradise

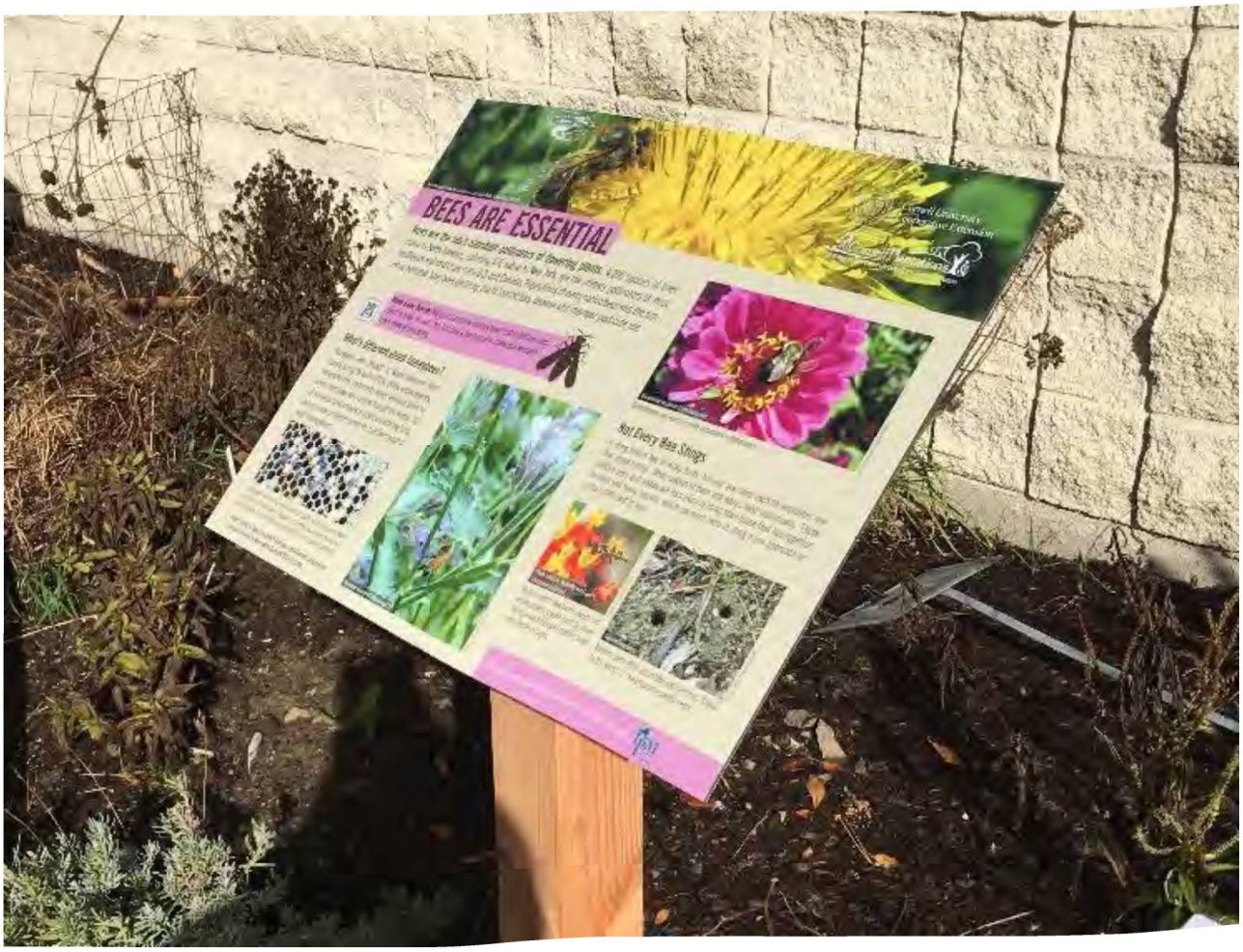
Project Location

Pollinator Demonstration Garden: You can visit the garden at 1 Geneva Rd, Brewster NY. The garden is adjacent to the NYS Department of Motor Vehicles office, and shares the building and parking lots with Cornell Cooperative Extension of Putnam County. The garden is open to the public year round and includes a small space vegetable garden demonstration and composting demonstration.

Samples of Resources Developed:

Garden interpretive signage, credited photos, and teaching materials are available to CCE educators statewide through a CCE file-sharing site. Other organizations or individuals who would like access to these materials can contact the project leader above for more specifics about use and permissions. Pdfs can be viewed at http://putnam.cce.cornell.edu/gardening/create-a-pollinator-paradise

Additional resources include 4-up card handouts, the articles "Bee-friendly Backyards" and "Fear of Flying (insects)" as well as links to many pollinator websites for homeowners and educators. Links to curricula for youth can also be found on the site. We will continue to add and update the website as new materials emerge.



CREATE A POLLINATOR PARADISE

Explore this garden to learn how you can create pollinator habitat at home.

Nearly all plants on earth depend on pollinators, which include bees, butterflies, moths, hummingbirds, wasps, flies, beetles and some bats. Many pollinators are in decline, especially bees and butterflies, due to habitat loss, improper pesticide use, disease and climate change.

Pollinators are responsible for **70%** of the food on our tables.

Pollinators need:

- **Food**: nectar & pollen
- **Shelter**: places to hide
- **Water**: drinking and nest-making
- **Nesting Sites**: twigs, branches, bare earth
- **Building Materials**: mud, wood, grasses, sandy soil

Scan here for tips on making your home landscape pollinator-friendly.


Fritillary butterfly on milkweed (*Asclepias* spp.)

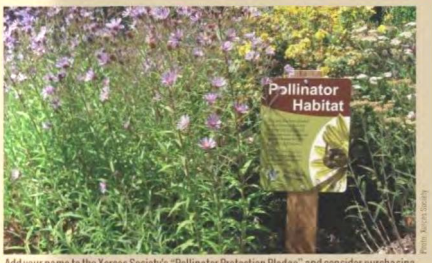

Ground wasp and hole


Bumblebee on butterfly weed (*Asclepias tuberosa*)

Landscapes with trees, shrubs, perennials and annuals planted close together harbor a wider variety and larger number of pollinators and other beneficial insects.


Sweatbee on black-eyed Susan (*Rudbeckia hirta*)

Parasites, diseases, and pests are weakening and killing bees.

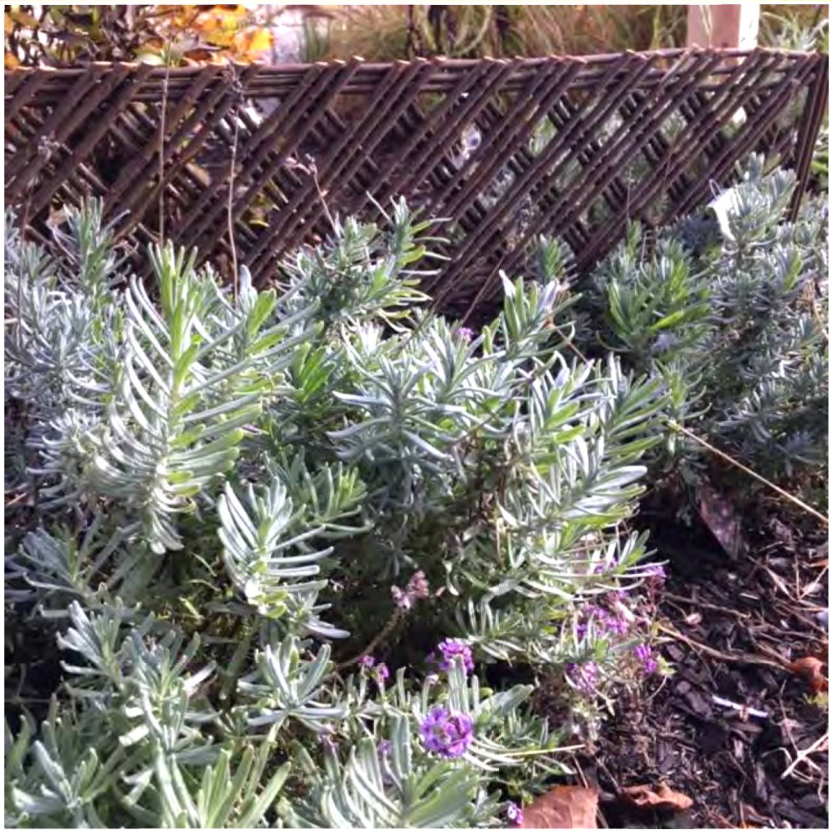


Add your name to the Xerces Society's "Pollinator Protection Pledge" and consider purchasing this sign (shown above) to support their efforts. Learn more at **www.xerces.org**.

Make your commitment public

Attractive garden signs let neighbors know you've made a commitment to support pollinators in your yard and garden.

This sign was made possible by a grant from the New York State IPM program.



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